

corresponding to said second stereoscopic display method, or data corresponding to said display method different from said first and second stereoscopic display methods; and

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cancel
Bowl* said second data switching means (17) outputs data corresponding to said video image of the other one of said video images of said two channels corresponding to said second stereoscopic display method.

A marked-up copy of the amended claims is attached as required under 37 C.F.R. § 1.121.

REMARKS

The following remarks are fully and completely responsive to the Office Action dated December 31, 2002. Claims 1-14, 20-21 and 23-25 are pending in this application with claims 15-19 and 22 cancelled by the present Amendment. In the outstanding Office Action, claims 1-7 and 23-25 were rejected under 35 U.S.C. § 102(e) and claims 8-12, 15-19 and 22 were rejected under 35 U.S.C. § 103(a) (three different rejections). Claims 13-14 and 20-21 were acknowledged as containing allowable subject matter. No new matter has been added. Claims 1-14, 20-21 and 23-25 are presented for consideration.

35 U.S.C. § 102(e)

Claims 1-7 and 23-25 were rejected under 35 U.S.C. § 102(e) as being anticipated by Tahara (U.S. Patent No. 5,633,682). In making this rejection, the Office Action asserts that this reference teaches each and every element of the claimed invention. Applicants disagree and request reconsideration of this rejection.

Claim 1 recites a digital broadcast receiver including: receiving means for demodulating and decompressing received video data and outputting pixel data; and determining means for detecting characteristic of the video data received by the receiving means, and determining whether the video data is video data in accordance with a stereoscopic broadcasting method, in response to the result of detection.

Claim 23 recites a video data apparatus including: video signal processing means for forming video data of one channel by arranging an image corresponding to a first video signal and an image corresponding to a second video signal different from each other, divided into upper and lower portions of one image plane; compressing means for compressing the video data; and recording means for recording the compressed video data on a recording medium.

Tahara discloses a coding system for transmitting stereo image data, where the image for the left eye is placed in odd fields and the image for the right eye is placed in even fields, respectively. Figure 5 of Tahara illustrates using video cameras 41 and 42 for the left and right eyes, respectively. Cameras 41 and 42 are located at positions corresponding to the parallax of left and right human eyes. The video signals from cameras 41 and 46 are sent to composite circuit 43. Composite circuit 43 composites the video signals using an interlaced signal structure, where the odd fields correspond to the signal from the left eye camera and the even fields correspond to the signal from the right eye camera. Composite circuit 43 outputs a video signal to coding unit 1.

Figure 6 illustrates a coding unit 1 and a decoding unit 2. Coding unit 1 uses an MPEG coding structure to covert the video signal into a video data stream for placing on recording medium 3. When the video data signal is read from the recording medium 3,

it is decoded utilizing decoding unit 2 to convert the video data signal stored on the recording medium 3 into a video output signal that can be displayed on a conventional video display device such as a TV.

The Office Action asserts that the decoding unit 2 disclosed in Tahara is the digital broadcast receiver recited in the claims.

The data reproduced from the recording medium 3 by reproducing circuit 30 is supplied to a decoder 31. Figure 13 provides a detailed example of the decoder 31 shown in Figure 6. According to the embodiment shown in Figure 13, the reproduced data is demodulated in demodulator 79. Thereafter, the demodulated data is decoded (decompressed) using decoding circuit 90.

The output of the decoded (decompressed) signal from decoder 31 is provided to format converting circuit 32. Format converting circuit 32 converts the decompressed signal from a block format to a frame format.

The Office Action asserts that the format converting circuit 32 forms part of the recited determining means.

The format converting circuit 32 converts the data decoded by decoder 31 from the block format to the frame format. Thus, format converting circuit 32 reverses the process performed in format converting circuit 17. This process is described in Tahara at column 6, beginning at line 6, and is illustrated in Figure 7. Accordingly, it appears that the format converting circuit 32 does not have anything to do with detecting a broadcasting method of the video data received by the receiving means or determining whether the video data is video data in accordance with a stereoscopic broadcasting method in response to the result of detection.

The Office Action also asserts that the DCT block reordering circuit 85 also forms part of the recited determining means.

The DCT block reordering circuit reorders the data received from the IDCT circuit 84. The DCT block reordering circuit 85 reorders this data corresponding to the DCT flag and prediction flag so that it is reordered in the same order of data which a motion compensating circuit 88 outputs to operator 86. In essence, the frame/field DCT block reordering circuit returns the decompressed/decoded data back to its original order. Reordering circuit 85, however, does not provide the function of determining whether the video data is video data in accordance with a stereoscopic broadcasting method in response to the result of the detection. Instead, reordering circuit 85 in response to a frame/field DCT flag and frame/field prediction flag reorders the frame/field in accordance with these flags. The function of reordering the frame/fields in reordering circuit 85, however, is not the same as determining whether the video data is video data in accordance with a stereoscopic broadcasting method.

Tahara only deals with stereoscopic signals in the coding and decoding circuits. Since Tahara does not teach receiving any signals in a format other than a stereoscopic broadcasting method, there would not be any need for and/or motivation for this reference to include a determining means that would determine whether the video data is video data in accordance with a stereoscopic broadcasting method.

Regarding claim 3, Tahara discloses that the video data is video data in accordance with a stereoscopic broadcasting method. This reference, however, does not disclose handling video data other than video data in accordance with a stereoscopic broadcasting method. Therefore, Tahara fails to need and therefore

disclose a determining means that determines whether the received video data is video data broadcast in accordance with a stereoscopic broadcasting method or video data broadcast in accordance with a broadcasting method different than the stereoscopic broadcasting method. Accordingly, it appears that Tahara fails to disclose and/or suggest the function of determining whether the received video data is the first video data or the second video data as recited in claim 3.

Regarding claim 5, Tahara discloses a frame memory 33. This frame memory is formed from a luminance signal frame memory 34 and a color-difference signal frame memory 35. The luminance signal frame memory 34 and color-difference signal frame memory 35 appear to store an entire frame of pixel data.

Tahara also discloses a frame memory 87 that is part of the decoder 90. Frame memory 87, similar to frame memory 33, appears to store the entire image frame. Neither frame memory 33 nor frame memory 87 performs the function of storing pixel data of a specific area of the first block and second block corresponding to the specific area of the first block.

The Office Action asserts that the format converting circuit 32 of Tahara compares pixel data of the specific area of the first block stored in the storing means (frame memory 33) with the pixel data of the specific area of the second block stored in the storing means (frame memory 33). The Office Action also asserts that format converting circuit 32 determines and outputs whether the received video data is the first video data or the second video data.

As illustrated in Figure 6 of Tahara, frame memory 33 receives video data from format converting circuit 32 but does not transmit or send the video data back to format

converting circuit 32. Frame memory 33 only outputs the frame memory data to DA converters 36 and 37. Accordingly, format converting circuit 32 does not perform the functions recited in claim 5. Specifically, the format converting circuit fails to compare the pixel data of the specific area of the first block stored in the storing means with the pixel data of the specific area of the second block stored in the storing means for determining and outputting whether received video data is the first video data or the second video data. Since format converting circuit 32 does not receive data from frame memory 33, it can neither compare this data nor determine whether the video data represents video data from a first video signal, such as a stereoscopic broadcasting method, or a second video data from a broadcasting method other than a stereoscopic broadcasting method.

The Office Action also asserts that the frame/field DCT block reordering circuit 85 compares the pixel data of the specific area of the first block stored in the storing means (frame memory 87) with pixel data of the specific area of the second block stored in the storing means (frame memory 87). A careful review of Figure 13 also shows that the frame/field DCT block reordering circuit 85 does not receive data from frame memory 87. In fact, frame memory 87 receives the output of frame/field DCT block reordering circuit 85, but does not transmit the frame data back to reordering circuit 85. Frame memory 87, however, provides the output from the frame memory to the motion compensating circuit 88. Since reordering circuit 85 does not receive video data from frame memory 87, frame/field DCT block reordering circuit 85 cannot perform the function of comparing the pixel data of the specific area of the first block stored in the storing means (frame memory 87) with the pixel data of the specific area of the second

block stored in the storing means (frame memory 87). Frame/field DCT block reordering circuit 85 also cannot use the results of this comparison to determine and output whether the video data received is the first video data in accordance with the stereoscopic broadcasting method or the second video data in accordance with a broadcasting method different from the first video data.

Regarding claim 7, Tahara discloses a stereoscopic video display apparatus. This stereo image display system receives a stereoscopic video signal from decoder 2. This signal is provided to a CRT 101 and to an electric shutter controller 102. Electric shutter controller 102 identifies the odd and even frames to control the left eye shutter and right eye shutter 103 and 104, respectively.

The Office Action asserts that the electric shutter controller 102 of Tahara separates and outputs a synchronizing signal from the received video signal. The Office Action also asserts that the electric shutter controller 102 determines, based on the synchronizing signal, output from the separating means whether the video signal is a video signal in accordance with a stereoscopic broadcasting method.

While the identification of the odd and even frames may be considered a synchronizing signal, the electric shutter controller does not use the odd and even frame determination to determine whether the video signal is a video signal in accordance with a stereoscopic broadcasting method. In contrast, the electric shutter controller of Tahara uses the odd and even frame determination to control the left and right eye shutters 103 and 104, respectively. Consequently, if a non-stereoscopic broadcast signal were supplied to the stereo image display system shown in Figure 2 of Tahara, this system would treat the non-stereoscopic signal in the same manner as a

stereoscopic signal operating the left eye shutter and right eye shutter 103 and 104, respectively, in accordance with the odd and even frames identified by the electric shutter controller 102. Therefore, Tahara does not perform the function of determining, based on the synchronizing signal output from the separating means, whether the video signal is the video signal in accordance with the stereoscopic broadcasting method.

The Office Action asserts that the CRT 101 performs the function of displaying to the user, based on the result of the determination by the determination means, whether the broadcasting method of the received video signal is the stereoscopic broadcasting method. CRT 101 only displays a stereo broadcasting system because decoder 2, as discussed above, only decodes a stereo broadcast signal. Tahara does not disclose that decoder 2 is capable of decoding any other type of video signal. In fact, it would appear that decoder 2, if it were to receive a non-stereo broadcast signal, would treat the received non-stereo broadcast signal as a stereo broadcast signal. Additionally, it does not appear that CRT 101 provides a display to the user that identifies the type of broadcast signal received. CRT 101 only displays the video signal output from decoder 2. CRT 101 does not receive any signal from the electric shutter controller which the Office Action asserts is both the recited separating means and recited determining means. Accordingly, CRT 101 does not perform the function of displaying to the user, based on the result of the determination by the determination means (electric shutter controller 102) whether the broadcasting method of the received video signal is the stereoscopic broadcasting method.

As discussed above, Tahara fails to teach and/or disclose the invention recited in claims 1-7. Accordingly, Applicants request reconsideration and withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 102(e).

Regarding claims 23-25, Tahara discloses recording a stereoscopic video data recording system utilizing two video cameras 41 and 42, respectively. Each video camera provides a video signal to composite circuit 43. Composite circuit 43 creates a stereoscopic output signal by using alternating frames from each video camera. Thus, the right eye video camera 42 image data would be placed in one field of an interlaced video frame, and the image data from the left eye video camera 41 would be placed in the other field of the video frame. Thus, Tahara teaches placing image data for a single eye in a single image plane.

Tahara, however, does not disclose that the first video signal and the second video signal would be placed into upper and lower portions of a single image plane. Accordingly, Tahara does not teach the function of forming video data of one channel by arranging an image corresponding to a first video signal and an image corresponding to a second video signal different from each other, divided into upper and lower portions of one image plane.

Tahara fails to teach and/or suggest the invention recited in claims 23-25. Specifically, this reference fails to disclose and/or suggest that the first video signal and the second video signal would be placed into upper and lower portions of the single image plane. Accordingly, Tahara fails to teach and/or suggest the function of forming video data of one channel by arranging an image corresponding to a first video signal and an image corresponding to a second video signal different from each other, divided

into upper and lower portions of one image plane. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 23-25 under 35 U.S.C. § 102(e).

35 U.S.C. § 103(a)

Claims 8-10, 15-16 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Tahara (discussed above) in view of Katayama (U.S. Patent No. 6,141,036). In making this rejection, the Office Action asserts that the combination of these two references teaches and/or suggests each and every element of the claimed invention. The Office Action also asserts that it would be obvious to one of ordinary skill in the art to combine these two references.

The cancellation of claims 15, 16 and 22 renders this rejection moot as to these claims. Applicants respectfully request reconsideration of this rejection of claims 8-10.

Claim 8 recites a display apparatus receiving at an input a first video signal or a second video signal, and reproducing and displaying on a monitor in accordance with a broadcasting method. The display apparatus includes: separating means responsive to reception of the first video signal, for separating and outputting a synchronizing signal from the input first video signal; determining means responsive to the synchronizing signal from the separating means for determining, based on the synchronizing signal, whether the signal to be reproduced and displayed on the monitor is the first video signal in accordance with a first broadcasting method or the first video signal in accordance with a second broadcasting method different from the first broadcasting method, and responsive to non-reception of the synchronizing signal from the

separating means, for determining that the signal to be reproduced and displayed on the monitor is the second video signal in accordance with a broadcasting method different from the first and second broadcasting methods; display means for displaying to the user, based on the results of determination by the determination means, the broadcasting method of the first video signal or the second video signal to be reproduced and displayed on the monitor; and reproducing and displaying means based on the broadcasting method determining means for reproducing and displaying the first video signal or the second video signal on the monitor.

As discussed above, the electric control shutter 102 of Figure 20 of Tahara outputs the right eye and left eye shutter control signals to the right eye and left eye shutters 104 and 103, respectively. The electric shutter controller 102, however, does not output any signal to CRT 101. Thus, Tahara does not appear to teach, in response to the synchronizing signal, determining whether the signal to be reproduced and displayed on the monitor (CRT 101) is the first video signal in accordance with a first broadcasting method or a first video signal in accordance with a second broadcasting method different from the first broadcasting method.

Similarly, Tahara fails to teach the function of determining that the signal to be reproduced and displayed on the monitor is the second video signal in accordance with a broadcasting method different from the first and second broadcasting methods in response to non-reception of the synchronizing signal from the separating means (electric shutter controller 102). As discussed above, Tahara deals with an interlaced stereo image display system. This system automatically assigns the odd field to the left eye and the even field to the right eye. Tahara appears to be incapable of operating

with a progressively scanned signal.

In Figure 12 of Katayama, however, the output signal generation means 127 receives an image mode signal from the image mode detecting means 105. In response to this signal, the output signal generating means 127 determines the output signal to be produced. As shown in Figure 10 of Katayama, an image mode signal is sent whenever the image mode changes from one mode to another. Accordingly, if the image mode changes without the receipt of an image mode signal, the device of Katayama will continue to produce an image utilizing the previous image mode.

Thus, Katayama fails to disclose the function of determining that the signal to be reproduced and displayed on the monitor is the second video signal in accordance with a broadcasting method different from the first and second broadcasting methods in response to nonreception of the synchronizing signal. Katayama, as illustrated in Figure 10, must receive a mode selection signal in order to change display modes.

The combination of Tahara and Katayama fails to disclose and/or suggest the invention recited in claims 8-10. The combination of these two references fails to teach and/or suggest determining that the signal to be reproduced and displayed on the monitor is the second video signal in accordance with a broadcasting method different from the first and second broadcasting methods in response to non-reception of the synchronizing signal from the separating means. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 8-10 under 35 U.S.C. § 103(a).

Claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tahara and Katayama (discussed above) and further in view of Kondo (U.S. Patent

No. 6,304,243). In making this rejection, the Office Action asserts that the combination of these three references teaches and/or suggests each and every element of the claimed invention. The Office Action also asserts that it would be obvious to one of ordinary skill in the art to combine these three references. Applicants respectfully disagree and request reconsideration of this rejection.

The Office Action admits that the combination of Tahara and Katayama does not specifically disclose a clock generating means, count means, latch means, control signal generating means and processing means. The Office Action cites Kondo as correcting these deficiencies in the combination of Tahara and Katayama. Even if Kondo corrects the deficiencies noted by the Office Action in Tahara and Katayama, the Office Action has not cited Kondo for, nor does Kondo correct, the deficiencies discussed above in the combination of Tahara and Katayama regarding claims 8-10.

Accordingly, the combination of these three references fails to teach and/or suggest the claimed invention. Specifically, the combination of these three references fails to teach and/or suggest determining that the signal to be reproduced and displayed on the monitor is the second video signal in accordance with a broadcasting method different from the first and second broadcasting methods in response to non-reception of the synchronizing signal. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 11 and 12 under 35 U.S.C. § 103(a).

Claims 17-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Katayama and Tahara (both discussed above) and Omar (U.S. Patent No. 6,449,090). The cancellation of claims 17-19 renders this rejection moot.

Allowable Subject Matter

Claims 13-14 and 20-21 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claims 13, 14 and 20 have been amended to include all the limitations of the base claim and any intervening claims. Accordingly, claims 13-14 and 20-21 are in condition for allowance. Therefore, Applicants respectfully request reconsideration and withdrawal of the objection to claims 13-14 and 20-21.

Conclusion

Applicants' amendments and remarks have overcome the objections and rejections set forth in the Office Action dated December 31, 2002. Specifically, Applicants' remarks have distinguished claims 1-7 and 23-25 from Tahara and thus overcome the rejection of these claims under 35 U.S.C. § 102(e). Applicants' remarks have also distinguished claims 8-10 from the combination of Tahara and Katayama and thus overcome the rejection of these claims under 35 U.S.C. § 103(a). Applicants' remarks have also distinguished claims 11 and 12 from the combination of Tahara, Katayama and Kondo and thus overcome the rejection of these claims under 35 U.S.C. § 103(a). The amendments to claims 13-14 and 20, which contained allowable subject matter, overcome the objection to claims 13-14 and 20-21. Accordingly, claims 1-14, 20-21 and 23-25 are in condition for allowance. Therefore, Applicants respectfully request consideration and allowance of claims 1-14, 20-21 and 23-25.

Applicants submit that the application is now in condition for allowance. If the Examiner believes that the application is not in condition for allowance, Applicants respectfully request that the Examiner contact the undersigned attorney by telephone if it is believed that such contact will expedite the prosecution of the application.

The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to our Deposit Account No. 01-2300, making reference to attorney docket number 100806-09022.

Respectfully submitted,



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Enclosures: Marked-Up Copy of Amended Claims
Petition for Extension of Time

MARKED-UP COPY OF AMENDED CLAIMS

13. (Amended) [The] A display apparatus [according to claim 11] receiving at an input a first video signal or a second video signal, and reproducing and displaying on a monitor in accordance with a broadcasting method, comprising:

separating means (33) responsive to reception of said first video signal, for separating and outputting a synchronizing signal from said input first video signal;

determining means (34) responsive to said synchronizing signal from said separating means (33), for determining based on said synchronizing signal, whether the signal to be reproduced and displayed on said monitor is said first video signal in accordance with a first broadcasting method or said first video signal in accordance with a second broadcasting method different from said first broadcasting method, and responsive to non-reception of said synchronizing signal from said separating means, for determining that the signal to be reproduced and displayed on said monitor is said second video signal in accordance with a broadcasting method different from said first and second broadcasting methods;

display means (51) for displaying to the user, based on the result of determination by said determining means (34), said broadcasting method of said first video signal or said second video signal to be reproduced and displayed on said monitor; and

reproducing and display means (36) based on said broadcasting method determined by said determining means for reproducing and displaying said first video signal or said second video signal on said monitor, wherein

said first video signal in accordance with said first broadcasting method includes a right eye video signal obtained by interlace scanning method and a left eye video signal obtained by interlace scanning method;

said first video signal in accordance with said second broadcasting method is a video signal obtained by non-interlace scanning method; and

said first broadcasting method is a stereoscopic broadcasting method, wherein

said determining means (34) includes

reference clock generating means (40) for generating clocks,

count means (41) for counting said generated clocks,

latch means (42) for latching count value counted by said count means (41),

processing means (44) obtaining said count value from said latch means (42) for determining, based on said count value, whether the video signal is in accordance with said first broadcasting method or said second broadcasting method, and

control signal generating means (43) responsive to reception of said synchronizing signal from said separating means (33) for generating a control signal to cause said latch means (42) to latch said count value counted by said count means (41), cause said count by said count means (41) to reset said count and cause said processing means (44) to take said count value latched by said latch means (42); and

said processing means (44) compares the count value obtained from said latch means (42) with a prescribed reference value, for determining, based on the result of said comparison, whether said synchronizing signal is in accordance with said first broadcasting method or said second broadcasting method, and when said count value

is not received, determines that said synchronizing signal is in accordance with said broadcasting method different from first and second broadcasting methods, and wherein

said reference value is determined from frequency of said vertical synchronizing signal in said first video signal in accordance with said first broadcasting method, frequency of said vertical synchronizing signal in said first video signal in accordance with said second broadcasting method and repetition frequency of said clocks.

14. (Amended) [The] A display apparatus [according to claim 12] receiving at an input a first video signal or a second video signal, and reproducing and displaying on a monitor in accordance with a broadcasting method, comprising:

separating means (33) responsive to reception of said first video signal, for separating and outputting a synchronizing signal from said input first video signal;

determining means (34) responsive to said synchronizing signal from said separating means (33), for determining based on said synchronizing signal, whether the signal to be reproduced and displayed on said monitor is said first video signal in accordance with a first broadcasting method or said first video signal in accordance with a second broadcasting method different from said first broadcasting method, and responsive to non-reception of said synchronizing signal from said separating means, for determining that the signal to be reproduced and displayed on said monitor is said second video signal in accordance with a broadcasting method different from said first and second broadcasting methods;

display means (51) for displaying to the user, based on the result of determination by said determining means (34), said broadcasting method of said first

video signal or said second video signal to be reproduced and displayed on said monitor; and

reproducing and display means (36) based on said broadcasting method determined by said determining means for reproducing and displaying said first video signal or said second video signal on said monitor, wherein

said synchronizing signal is a vertical synchronizing signal; and

said vertical synchronizing signal in said first video signal in accordance with said first broadcasting method and said vertical synchronizing signal in said first video signal in accordance with said second broadcasting method have mutually different frequencies, wherein

said determining means (34) includes

reference clock generating means (40) for generating clocks,

count means (41) for counting said generated clocks,

latch means (42) for latching count value counted by said count means (41),

processing means (44) obtaining said count value from said latch means (42) for determining, based on said count value, whether the video signal is in accordance with said first broadcasting method or said second broadcasting method, and

control signal generating means (43) responsive to reception of said synchronizing signal from said separating means (33) for generating a control signal to cause said latch means (42) to latch said count value counted by said count means (41), cause said count by said count means (41) to reset said count and cause said processing means (44) to take said count value latched by said latch means (42); and

said processing means (44) compares the count value obtained from said latch means (42) with a prescribed reference value for determining, based on the result of said comparison, whether said synchronizing signal is in accordance with said first broadcasting method or said second broadcasting method, and when said count value is not received, determines that said synchronizing signal is in accordance with said broadcasting method different from first and second broadcasting methods, and wherein

said reference value is determined from frequency of said vertical synchronizing signal in said first video signal in accordance with said first broadcasting method, frequency of said vertical synchronizing signal in said first video signal in accordance with said second broadcasting method and repetition frequency of said clocks.

20. (Amended) [The] A digital broadcast receiver [according to claim 18] compatible with a plurality of display methods including a plurality of stereoscopic display methods, comprising:

receiving means (1,2) for demodulating and decompressing received video data;

determining means (24) for determining whether said received video data is video data in accordance with a stereoscopic broadcasting method or video data different from the stereoscopic broadcasting method;

selecting means (27) operated by a user for selecting one stereoscopic display method among said plurality of stereoscopic display methods;

formatting means (25) for formatting a signal output from said receiving means;
and

control means (10) for determining, based on the result of determination by said determining means (24) and selection by said selecting means (27), display method for

reproducing and displaying said received video data, and controlling formatting by said formatting means (25), wherein

said video data in accordance with said stereoscopic broadcasting method has one image plane including an image plane for a right eye video image obtained by interlace scanning and an image plane for a left eye video image obtained by interlace scanning method; and

said stereoscopic display method is a first stereoscopic display method providing stereoscopic display by video images of one channel, or a second stereoscopic display method providing a stereoscopic display by video images of two channels, and wherein

said formatting means (25) includes

first storing means (12) for storing an output of said receiving means (1,2) and from which said stored data is read under the control of said control means (10),

second storage means (13) for storing an output of said receiving means (1,2), and from which said stored data is read under the control of said control means (10), different from said first storing means (12),

input switching means (11) for inputting an output of said receiving means (1,2) to said first storing means (12) or said second storing means (13) under the control of said control means (10),

level data output means (14, 15) for generating and outputting level data,

first data switching means (16) for switching between and outputting the data read from said first storage means (12) and said level data output from said level data output means (14, 15) under the control of said control means (10), and

second data switching means (17) for switching between and outputting the data read from said second storing means (13) and said level data output from said level data output means (14, 15) under the control of said control means (10);

said first data switching means (16) outputs data corresponding to said video images of said one channel corresponding to said first stereoscopic display method or data corresponding to said video images of either one of said two channels corresponding to said second stereoscopic display method, or data corresponding to said display method different from said first and second stereoscopic display methods; and

said second data switching means (17) outputs data corresponding to said video image of the other one of said video images of said two channels corresponding to said second stereoscopic display method.

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